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The optical properties of aerosol particles are one of the controlling factors in determining direct aerosol radiative forcing. These optical properties depend on the chemical composition and size distribution of the aerosol particles, which can change due to various processes during the particles' lifetime in the atmosphere. Here we present preliminary results showing aerosol optical and chemical properties obtained during the CHAPS field campaign within cloud drops and outside of clouds. The Cumulis Humilis Aerosol Processing Study (CHAPS), sponsored by the DOE Atmospheric Science Program (ASP), took place in the vicinity of Oklahoma City in June, 2007. The intention of the study was to investigate the influence of clouds on aerosols and of aerosol on clouds. Duplicate sets of in-situ aerosol optical instruments were deployed on the ASP G-1 aircraft during the CHAPS campaign. One set of instruments was downstream of an isokinetic inlet designed to sample the ambient aerosol, the other set was downstream of a counterflow virtual impactor (CVI) designed to sample and dry cloud droplets so that the cloud drop nuclei could be studied. Each instrument set comprised a 3-wavelength particle soot absorption photometer (PSAP) and integrating nephelometer to provide spectral aerosol absorption, scattering and back-scattering and a particle counter to obtain aerosol number concentration. In addition, a time-of-flight aerosol mass spectrometer (ToF-AMS) was able to sample on either inlet to provide information about the non-refractory chemical composition of the aerosol and cloud drop residuals. The data presented here will describe both how aerosol optical properties change upstream and downstream of a mid-size conurbation (Oklahoma City) and how ambient aerosol optical properties differ from those of the cloud drop nuclei. These changes in aerosol optical properties will be placed in the context of differences in chemical composition derived from the ToF-AMS.